REMARKS

By the present amendment, claims 56, 57 and 59 have been cancelled, claims 55, 58, 60, 115 and 116 have been amended, and no new claims have been added. Accordingly, claims 55, 58 and 60-131 are presently pending, of which claims 55, 115 and 116 are the independent claims. Rejoinder of claims 76-114 and 117-131, which presently stand withdrawn from consideration, is respectfully requested pursuant to 37 C.F.R. § 1.141, as discussed in greater detail below. Accordingly, favorable reconsideration and allowance of claims 55, 58 and 60 – 131 is respectfully requested.

Applicants wish to thank the Examiner for the careful review of the present application and of the prior art.

Applicants also wish to thank the Examiner for having withdrawn all of the previous grounds of rejection under 35 U.S.C. § 102 and 103 that were based upon U.S. Patent No. 6,849,831 to Timans et al. as the primary reference.

Allowable Subject-Matter

Applicants wish to thank the Examiner for the indication that claims 63-65 recite allowable subject-matter and would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

35 U.S.C. § 102: Fein

The Examiner has conducted a new search of the prior art. Based on the result of this search, the Examiner has rejected claims 55, 56, 115 and 116 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,877,997 to Fein ("Fein").

By the present amendment, independent claim 55 has been amended to include limitations similar to those of dependent claims 56–59, except the remaining limitation of claim 58 that the first electrode includes a cathode.

More pertinently, claim 55 has been amended to include the limitations of former claim 57, which the Examiner did not reject under 35 U.S.C. § 102. Applicants therefore respectfully submit that this ground of rejection of claim 55 has been overcome.

By the present amendment, claim 56 has been cancelled, and therefore, the rejection of this claim has been overcome.

Also by the present amendment, independent claims 115 and 116 have been amended to recite limitations similar to those of former claim 57, which the Examiner did not reject under 35 U.S.C. § 102. Applicants therefore respectfully submit that this ground of rejection of claims 115 and 116 has been overcome.

35 U.S.C. § 102: Grossman

The Examiner has rejected claims 55, 56, 58, 60-62, 66, 71, 115 and 116 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,963,783 to Grossman ("Grossman").

By the present amendment, claim 55 has been amended to include the limitations of former claim 57, which the Examiner did not reject under 35 U.S.C. § 102. Applicants therefore respectfully submit that this ground of rejection of claim 55 has been overcome.

By the present amendment, claim 56 has been cancelled, and therefore, the rejection of this claim has been overcome.

Claims 58, 60-62, 66 and 71 are directly or indirectly dependent upon amended claim 55. Applicants therefore respectfully submit that these claims are allowable due to their dependencies, as well as the additional subject-matter that each of these claims recites.

By the present amendment, independent claims 115 and 116 have been amended to recite limitations similar to those of former claim 57, which the Examiner did not reject under 35 U.S.C. § 102. Applicants therefore respectfully submit that this ground of rejection of claims 115 and 116 has been overcome.

The Grossman reference is discussed in detail below in connection with 35 U.S.C. § 103.

35 U.S.C. § 102: Carmichael

The Examiner has rejected claims 55, 115 and 116 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,504,666 to Carmichael ("Carmichael").

By the present amendment, independent claims 55, 115 and 116 have been amended to recite limitations similar to those of former claim 57, which the Examiner did not reject under 35 U.S.C. § 102. Applicants therefore respectfully submit that this ground of rejection of claims 55, 115 and 116 has been overcome.

35 U.S.C. § 103: Grossman in view of Nodwell

The Examiner has rejected claims 57, 59 and 75 under 35 U.S.C. § 103(a) as being unpatentable over Grossman in view of U.S. Patent No. 4,027,185 to Nodwell et al. ("Nodwell").

By the present amendment, claims 57 and 59 have been cancelled, and therefore, the rejections of these claims have been technically overcome.

However, in view of the fact that limitations similar to those of cancelled claims 57 and 59 have been incorporated into amended claim 55, Applicants have addressed the Examiner's obviousness rejections of former claims 57 and 59 in connection with currently amended claim 55, in an attempt to expedite the prosecution and allowance of this application.

On page 8 of the present Office Action, the Examiner has conceded that Grossman fails to disclose a flow generator comprising a conductor, as recited in former claim 57 and as recited in claim 55 as currently amended. However, the Examiner has stated that Nodwell discloses a flow generator comprising a conductor, and has expressed the initial view that it would have been obvious to modify Grossman to include a flow generator comprising a conductor as disclosed by Nodwell, for the purpose of efficiently generating the flow of liquid.

Applicants respectfully submit that the Grossman and Nodwell references fail to satisfy the requirements for a finding of obviousness of independent claim 55 as presently amended. Applicants' submissions in this respect have been prepared in light of the "Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*" (Federal Register, Vol. 72, No. 195, Oct. 10, 2007, pp. 57526 – 57535) (the "Guidelines").

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 at 17-18 (1966), the Supreme Court set out the following objective framework for applying the statutory language of §103:

> "Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art

resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented."

Accordingly, the Guidelines confirm that obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court in *Graham* are as follows:

(1) Determining the scope and content of the prior art;
(2) Ascertaining the differences between the claimed invention and the prior art; and
(3) Resolving the level of ordinary skill in the pertinent art.

Applicants respectfully submit that at least the first and the second of the *Graham* factual inquiries support a finding of non-obviousness of claim 55 as currently amended.

Scope and Content of the Prior Art

The primary reference, Grossman, generally discloses the use of a fluid heat transfer medium to control the pressure of mercury vapor within a mercury vapor lamp, in order to control both the bandwidth and intensity of the lamp output. (Abstract.)

More particularly, in order to successfully use a mercury lamp as the excitation source for photochemical separation of a single isotope, the spectral bandwidth of the mercury lamp must be sufficiently narrow that it excites only the specific isotope of interest, and not other isotopes. The spectral bandwidth of the lamp is strongly dependent upon the vapor equilibrium pressure of the mercury used in the lamp. As a result, variations in mercury vapor pressure within the lamp can cause disturbances in the

linewidth and intensity of radiation emitted by the lamp, resulting in unintended stimulation of undesirable isotopes rather than the desired isotope, and the rate of separation of the desired isotope may also be affected. According to Grossman, previous systems were not able to adequately control the mercury vapor pressure inside the lamps, resulting in insufficient control of the spectral bandwidth of the lamps. This problem is due to temperature variations in the lamp, and in particular, the "cold spot", which determines the equilibrium vapor pressure within the lamp (col. 1, lines 19-51).

Grossman addresses this problem by controlling the equilibrium mercury vapor pressure within the lamp envelope, in order to establish the desired spectral linewidth of emitted radiation. Grossman achieves this by establishing and controlling a temperature zone, by surrounding at least a section of the lamp envelope with an outer, elongated cylindrical tube which serves to define a heat transfer region. A heat transfer medium, preferably water, is circulated at a controlled temperature through the heat transfer region, thereby regulating the temperature of the lamp envelope. Controlling the temperature of the envelope allows the equilibrium mercury vapor pressure contained within the envelope to be controlled, thereby allowing control of the bandwidth and intensity of radiation emitted by the lamp (col. 2, lines 35-52).

Thus, with reference to Figure 1, Grossman discloses a mercury lamp 20 comprising an inner lamp envelope 2 and an outer jacket 3, both constructed of quartz. The inner envelope 2 has tubes 11 at each end to contain the electrodes and to provide regions for mounting the inner envelope 2 within the outer jacket 3. The tubes 11 of the inner envelope 2 are separated from the outer jacket 3 with spacers 10, which have openings to allow water to travel through the space between the inner envelope 2 and the outer jacket 3. A tapered stopper 4, typically of an elastomeric material, is disposed at each end of the outer jacket 3 and serves to center the outer jacket 3 around the envelope 2. Each tapered stopper 4 also guides and positions an electrode

lead 5 through the stopper and the outer jacket 3 into the envelope 2 where it provides current for the electrodes 6. The two tapered stoppers 4 also contain openings through their centers which provide for an inlet 7 stream and an outlet 8 stream of circulating water, which circulates over the outer surface of the inner discharge envelope 2, travelling in the space between the inner envelope 2 and the outer jacket 3, through the openings in the spacers 10. (Fig. 1 and col. 4, lines 24-64).

With respect to flow generators, Applicants respectfully assume that the Examiner has compared the opening in the stopper 4 through which the inlet 7 stream of water enters the lamp, to the claimed "flow generator" recited in claim 55. However, the stopper 4 of Grossman does not comprise "an electrical conductor". Rather, Grossman specifically states that the stopper 4 is typically composed of an elastomeric material (col. 4, lines 40-41), which by definition is an elastic polymer such as rubber or plastic material, and which would not be electrically conductive. Applicants respectfully assume that this is why the Examiner has conceded on page 8 of the present Office Action that Grossman fails to disclose a flow generator comprising a conductor, as recited in former claim 57 (and as now recited in claim 55 as currently amended).

In the secondary reference, Nodwell, the liquid flow generator includes the anode structure 24, which in turn includes an annular chamber 39 into which coolant is introduced under pressure through an inlet 40. The coolant forms a vortex which is fast enough to take the form of a hollow liquid cylinder 42 lining the inside of the arc chamber 22 (col. 4, lines 43-54; Figure 2). The anode structure 24 also includes a gas outlet 44.

Applicants respectfully note that the Grossman lamp is significantly different than the Nodwell lamp, both in terms of its structure and its underlying principle of operation.

For example, the Grossman lamp is a mercury vapor lamp. Grossman produces light by causing the excitation of mercury, causing the excited mercury to emit light at specific predefined frequencies. Grossman requires mercury to be present in its vapor phase, and more particularly, requires strict control over the mercury vapor pressure, in order to produce the desired narrow bandwidth of radiation for photochemical separation of the desired mercury isotopes, as discussed above. For photochemical separation of ^{196}Hg, for example, the Grossman lamp must produce a narrow-band spectrum at 257 nm (Abstract; col. 3, lines 41-43; claims 1 and 11; and throughout Grossman generally).

In contrast, the Nodwell lamp is not a vapor lamp. Nodwell does not produce narrowband frequency radiation by exciting any specific isotope such as mercury, but rather, produces light by establishing and maintaining a high-power plasma arc between the electrodes. Thus, unlike Grossman, Nodwell does not require a metal such as mercury to be sustained in a vapor phase for its successful operation. Rather, the Nodwell lamp establishes an arc through an inert gas 9 such as argon. Unlike the narrow bandwidth of the emission spectrum produced by the Grossman mercury vapor lamp, the argon plasma arc lamp of Nodwell produces a considerably broader emission spectrum, which may include significant intensities at wavelengths ranging continuously from about 200 to about 1400 nm, for example.

Accordingly, the vapor lamp of Grossman is fundamentally different in its principles of operation from the argon plasma arc lamp of Nodwell. These different principles of operation are reflected in significant differences between the flow generator structures of Grossman and Nodwell.

In this regard, the Grossman lamp is an example of a "water jacket" lamp having a cooling flow of liquid along an outside surface of the envelope 2 in which the arc is sustained. Thus, in Grossman, the opening in the elastomeric stopper 4 (which may be comparable to a flow generator), through which the inlet 7 stream of cooling liquid enters the lamp, is not in

fluid communication with the discharge chamber inside the envelope 2 in which the electrodes are contained. Rather, in Grossman, the envelope 2 containing the electrodes 6 is sealed (col. 3, lines 44-50; claims 1 and 11), thereby physically isolating the electrodes and mercury vapor inside the envelope 2 from the cooling flow of liquid which is outside the envelope 2. Presumably, this sealing is required in order to preserve the mercury vapor, which is essential for the operation of the Grossman lamp.

In contrast, Nodwell, which shares overlapping inventorship with the present application, is an example of a "water wall" lamp in which a flow of cooling liquid is circulated in a vortexing fashion along an inside surface of the arc chamber 22. Thus, unlike Grossman, in which the envelope 2 provides a physical barrier isolating the electrical current between the electrodes from the cooling liquid flow, in Nodwell, there is no such barrier. Rather, in Nodwell, the vortexing flow of cooling liquid is maintained on the inside surface of the same arc chamber 22 envelope in which the plasma arc between the electrodes is maintained. The vortexing flow of cooling liquid in Nodwell surrounds and constricts the periphery of the gas column through which the arc is discharged, thereby constricting the arc diameter, advantageously obtaining an arc having positive dynamic impedance, with reduced gas flow, in contrast with conventional high-intensity gas-stabilized arcs (col. 2, line 42 – col. 3, line 8; col. 4, line 65 – col. 5, line 3).

In Nodwell, the flow generator structure includes an integral part of the anode structure 24, comprising an annular chamber 39 into which coolant is introduced under pressure through an inlet 40, thereby forming a liquid vortex which travels along the inside surface of the arc chamber 22 fast enough to effectively form a hollow cylinder 42 of water lining the inside of the arc chamber 22 (col. 4, lines 50-55; Figure 2).

Unlike the sealed envelope 2 of Grossman, the arc chamber 22 of Nodwell is not sealed. Rather, the arc chamber 22 of Nodwell has numerous openings, including a liquid coolant inlet 40 and a gas outlet 44 at the anode side, and a

liquid coolant outlet 34 and a gas inlet 30 at the cathode side (Figure 2). Thus, unlike Grossman, the flow generator structure of Nodwell, comprising the annular chamber 39 and fluid inlet 40 of the anode structure 24, is in direct fluid communication with the interior of the arc chamber 22.

Thus, the Grossman mercury vapor lamp and the Nodwell argon plasma arc lamp are very different from each other, both in their principles of operation and in their flow generator structures. In view of these significant differences, Applicants respectfully submit that the first of the *Graham* factual inquiries weighs against any possible combination of these two references.

Differences Between the Claimed Invention and the Cited References

With respect to the second of the *Graham* factual inquiries, Applicants respectfully submit that important differences exist between the claimed invention and the cited references. In this regard, by the present amendment, independent claim 55 has been amended to recite:

55. (Currently amended) An apparatus for producing electromagnetic radiation, the apparatus comprising:

a) an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope, wherein said electrically insulated flow generator comprises an electrical conductor and electrical insulation surrounding said conductor;

b) first and second electrodes configured to generate an electrical arc within the envelope to produce the electromagnetic radiation; and

c) an electrical connection to the first electrode, wherein said electrical connection comprises said conductor of said electrically insulated flow generator, and wherein said electrical insulation surrounds said first electrode and said conductor.

There are significant differences between the primary reference to Grossman and amended claim 55. In particular, Grossman fails to disclose the subject-matter of both subparagraphs a) and c) of amended claim 55.

In this regard, as the Examiner has conceded, Grossman fails to disclose that the flow generator comprises a conductor, as recited in former claim 57 and as now recited in amended claim 55. Therefore, Grossman fails to disclose or suggest,

> a) an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope, wherein said electrically insulated flow generator comprises an electrical conductor and electrical insulation surrounding said conductor;"

as recited in subparagraph a) of claim 55. It necessarily follows that Grossman also fails to disclose or suggest,

> c) an electrical connection to the first electrode, wherein said electrical connection comprises said conductor of said electrically insulated flow generator, and wherein said electrical insulation surrounds said first electrode and said conductor

as recited in subparagraph (c) of amended claim 55.

With respect to one of these differences between amended claim 55 and Grossman, namely, that the electrically insulated flow generator of claim 55 comprises a conductor, the Examiner has stated that Nodwell discloses a flow generator including a conductor, and has expressed the view that it would have been obvious to modify the Grossman lamp to include a flow generator including a conductor as disclosed by Nodwell.

However, Applicants respectfully submit that:

(1) there would not have been any apparent reason to modify Grossman to include the conductive flow generator of Nodwell; on the contrary, such a modification is impermissible because it would render Grossman unsatisfactory for its intended purpose; and

(2) even if there was a reason to combine Grossman and Nodwell, the resulting combination would not arrive at the subject-matter of amended claim 55, as significant differences would still exist between such a combination and amended claim 55.

(1) No apparent reason to combine; proposed combination would render Grossman unsatisfactory for its intended purpose

In *KSR International Co. v. Teleflex Inc.*, 550 U.S. _____ (2007), although the Supreme Court rejected a "rigid application" of the teaching-suggestion-motivation test for obviousness, the Court nevertheless emphasized (at p.14) that a finding of obviousness requires an "apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit."

The Examiner has stated on page 8 of the Office Action that the reason for the proposed modification of Grossman to include the flow generator of Nodwell would be "for the purpose of efficiently generating the flow of liquid".

However, Applicants respectfully note that modifying Grossman to include the flow generator of Nodwell would not in any way improve the efficiency of the flow of liquid. On the contrary, the flow generator of Nodwell would render the Grossman lamp unsatisfactory for its intended purpose.

In this regard, Applicants respectfully note that it is well-established that a proposed modification that would render the prior art unsatisfactory for its intended purpose cannot support a finding of obviousness (M.P.E.P. §

2143.01.V, citing *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)).

In the present case, Applicants were uncertain as to whether the Examiner is proposing to modify Grossman by directly substituting the flow generator of Nodwell into Grossman, which would result in a vortexing flow of liquid on the inside surface of the envelope 2, or whether the Examiner intended a further modification by which the flow generator of Nodwell would be somehow adapted to provide a cooling flow of liquid in the space between the envelope 2 and the outer jacket 3 of Grossman (i.e. the same space in which the inlet 7 stream flows in Grossman). Therefore, Applicants have addressed both possibilities below.

If the Examiner intended a direct substitution of the flow generator structure of Nodwell into Grossman, then Applicants respectfully note that the flow generator structure of Grossman includes the anode structure 24, comprising the annular chamber 39 through which coolant is introduced under pressure through inlet 40 (col. 4, lines 50-55). Thus, in Nodwell, the flow generator is integral with the anode itself. Accordingly, substituting the Nodwell flow generator into Grossman would require replacement of one of the electrode structures with the anode structure 24 of Nodwell. The anode structure 24 of Nodwell, and in particular the annular chamber 39 through which coolant is introduced through inlet 40, would then circulate a vortexing flow of liquid on the inside surface of the envelope 2 in which the mercury vapor is contained. The Grossman lamp would not be capable of functioning for its intended purpose under these conditions. As previously noted, the envelope 2 of Grossman is necessarily sealed, in order to preserve the mercury vapor contained within the envelope 2 that Grossman requires for its operation. However, modifying Grossman to include the flow generator of Nodwell would mean that the envelope 2 could no longer be sealed, because the flow generator structure of Nodwell requires the coolant inlet 40 through which coolant is introduced under pressure; Grossman would also have to be modified to provide a water outlet at the end of the lamp opposite from the

flow generator. Having a circulating flow of liquid coolant along the inside surface of the inner discharge envelope 2, provided by the flow generator of Nodwell, would lower the pressure of the mercury vapor to a level too low for the lamp to operate properly. In addition, the liquid coolant flow on the inside surface of the envelope 2 would carry the mercury vapor out of the envelope 2, leaving no mercury vapor left to be excited. Thus, if the Grossman lamp was modified to include the flow generator of Nodwell, the Grossman lamp would be incapable of producing the desired narrow-band radiation, or any radiation.

Alternatively, if the Examiner intended a further modification, by which the Nodwell flow generator was somehow modified and adapted to produce a flow of liquid in the space between the envelope 2 and the outer jacket 3 of Grossman (the same space in which the inlet 7 stream flows in Grossman), rather than inside the envelope 2, the Grossman lamp would be rendered unsatisfactory for its intended purpose in another sense. As discussed above, the purpose of the Grossman lamp is to control the linewidth and intensity of radiation produced by excited mercury, which is directly affected by the partial pressure of mercury vapor in the lamp. Grossman therefore seeks to indirectly control the mercury vapor pressure inside the envelope 2 by controlling the temperature of the outside surface of the envelope 2, by directing the inlet 7 stream of cooling liquid through the space defined between the outside surface of the envelope 2 and the inside surface of the outer jacket 3. However, the flow generator of Nodwell is a high-velocity flow generator, which produces a vortexing flow of liquid along the inside surface of the Nodwell arc chamber 22, the velocity of the liquid flow having both a longitudinal and a tangential (circumferential) component. As a result, centrifugal force in a radially outward direction causes the vortexing liquid flow to assume the form of a hollow cylinder of liquid in contact with the inside surface of the Nodwell arc chamber 22. If such a flow generator were to be substituted for the stopper 4 of Grossman with its opening for the inlet 7 stream, then the existing inlet 7 stream would be replaced by a high-velocity flow of liquid, in which centrifugal force would cause the vortexing liquid flow

to form a hollow cylinder on the inside surface of the outer jacket 3. The vortexing liquid flow would not be in physical contact with the outer surface of the envelope 2, due to outward centrifugal force. Therefore, such a modified Grossman lamp would lose its ability to control and regulate the temperature of the envelope 2, thereby losing its ability to control and regulate the mercury vapor pressure inside the envelope, thereby losing its ability to control the linewidth and intensity of the desired narrow-band radiation. Therefore, such a modification would render the Grossman lamp incapable of achieving its intended purpose.

In summary, Applicants respectfully submit that there is no apparent reason to modify Grossman to include the conductive flow generator of Nodwell. Such a modification would not improve the efficiency of the generation of the flow of liquid as suggested by the Examiner; rather, such a modification would necessarily render Grossman unsatisfactory for its intended purpose. Applicants therefore respectfully submit that Grossman cannot be modified in this manner, and respectfully submit that amended claim 55 complies with the requirements of 35 U.S.C. § 103.

(2) The combination would not arrive at the claimed invention

Even if Grossman were to be modified to include the flow generator of Nodwell, such a combination would still not arrive at the claimed invention, as significant differences would still exist between such a combination and claim 55 as currently amended.

For example, such a combination would fail to include an "electrically insulated flow generator [which] comprises an electrical conductor and electrical insulation surrounding said conductor". In this regard, neither Grossman nor Nodwell discloses this feature of amended claim 55. In Grossman, the existing structure comparable to a flow generator includes the elastomeric stopper 4 and its opening through which the inlet 7 stream enters the lamp. As seen in Figure 2 of Grossman, the elastomeric stopper 4 has a

tapered shape and extends longitudinally outward past the outermost edge of the outer jacket 3; this tapering and configuration are apparently required in order to center the outer jacket 3 around the envelope 2 (col. 4, lines 40-43). Thus, the outer edge of the stopper 4 is exposed to its surrounding environment. Therefore, if a metallic flow generator were to be substituted for the elastomeric stopper 4, the protruding tapered end of such a metallic flow generator would not be electrically insulated, but rather, would be exposed to its surrounding environment. Similarly, in Nodwell, the structure comparable to a flow generator includes the anode structure 24 comprising the annular chamber 39 into which cooling liquid is introduced under pressure through the inlet 40. As can clearly be seen in Figure 2 of Nodwell, the anode structure 24 is not electrically insulated, but rather, is exposed to its surrounding environment. Therefore, regardless of the manner in which elements of Grossman and Nodwell are to be combined, no such combination would provide an "electrically insulated flow generator [which] comprises an electrical conductor and electrical insulation surrounding said conductor", as recited in subparagraph (a) of amended claim 55.

In other words, to paraphrase the wording of the Supreme Court in *KSR* (at p.14), even if the Examiner believes there is an apparent reason to combine Grossman and Nodwell, the elements of Grossman and Nodwell cannot be combined "in the fashion claimed by the patent at issue".

Thus, not only are there significant differences between amended claim 55 and the Grossman and Nodwell references considered individually, there are also significant differences between amended claim 55 and the proposed combination of Grossman and Nodwell. Applicants respectfully submit that these differences strongly support a finding of non-obviousness of amended claim 55.

In summary, Applicants respectfully submit that both the first and the second of the *Graham* factual inquiries support a finding of non-obviousness of claim 55 as currently amended, and that the third *Graham* factual inquiry does not

detract in any way from the non-obviousness of claim 55. Applicants therefore respectfully submit that the subject-matter defined by claim 55 as presently amended would not have been obvious to one of ordinary skill in the art upon consideration of all of the relevant facts, and respectfully request allowance of this claim.

As noted above, claims 57 and 59 have been cancelled, and therefore, the rejection of these claims has been overcome.

Claim 75 is indirectly dependent upon amended independent claim 55. Applicants therefore respectfully submit that claim 75 is allowable due to its dependency, as well as the additional subject-matter that it recites.

35 U.S.C. § 103: Grossman and Other References

The Examiner has also rejected the following dependent claims, over Grossman by itself or in combination with other references:

- Claims 67 and 68 are rejected as being unpatentable over Grossman in view of U.S. Patent No. 5,753,106 to Schenck;
- Claims 69 and 70 are rejected as being unpatentable over Grossman;
- Claim 72 is rejected as being unpatentable over Grossman in view of U.S. Patent No. 6,621,199 to Parfeniuk;
- Claim 73 is rejected as being unpatentable over Grossman in view of U.S. Patent No. 5,137,659 to Ashley; and
- Claim 74 is rejected as being unpatentable over Grossman in view of U.S. Patent No. 6,465,799 to Kimble.

Claims 67–70 and 72–74 are directly or indirectly dependent upon amended claim 55. Applicants therefore respectfully submit that claims 67–70 and 72–74 are allowable due to their dependencies, as well as the additional subject-matter that each of these claims recites.

Election / Restrictions: Request for Rejoinder of claims 76-114 and 117-131

Rejoinder of claims 76-114 and 117-131, which are presently pending but withdrawn from consideration, is respectfully requested pursuant to 37 C.F.R. § 1.141.

In this regard, claims 76-114 and 117-119 are directly or indirectly dependent upon independent claim 55, while claims 120-131 are directly or indirectly dependent upon independent claim 116.

Applicants respectfully submit that independent claims 55 and 116 are both generic to all relevant species to which their dependent claims 58, 60-114 and 117-131 pertain, and therefore, claims 55 and 116 are both linking claims as discussed in M.P.E.P. § 809.03. As independent claims 55 and 116 have been shown to be allowable, applicants respectfully request that their dependent claims 76-114 and 117-131 be rejoined in this application and allowed, pursuant to 37 C.F.R. § 1.141.

Extension of Time

Applicants hereby petition for a three-month extension of time, until **October 8, 2008**, for responding to the present Office Action, which was mailed on April 8, 2008.

Payment in the amount of $1110.00 for a three-month extension is included with this submission, pursuant to 37 C.F.R. § 1.17(a)(3). The Commissioner is hereby authorized to charge any additional fees that may be required, including any fees for extensions of time, or credit any overpayment, to our deposit account no. 11-1410.

Conclusion

In view of the foregoing, Applicants respectfully submit that the present application is in condition for allowance, and respectfully request that a Notice of Allowance be issued.

Applicants respectfully note that since the present application was filed on Feb. 12, 2004, the Examiner has issued four Office Actions on the merits (six Office Actions in total). Each of the four Office Actions on the merits has cited new combinations of references stemming from four respective searches of the prior art conducted by the Examiner. Applicants respectfully submit that the Examiner has done a thorough and commendable job of searching for prior art pertinent to the present application, and respectfully submit that no further searching is required. Should the Examiner accept the foregoing submissions, Applicants respectfully request timely allowance of the present application.

Should there be any questions concerning this application, the Examiner is respectfully invited to contact the undersigned agent at the telephone number appearing below. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to deposit account No. 11-1410.

Respectfully submitted,

Knobbe, Martens, Olson & Bear

Dated: Oct. 8, 2008

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